

Family Activity Packet: Observation Guide

www.globeatnight.org

March 3 - March 16, 2010

Students and families are encouraged to participate in a global campaign to observe and record the magnitude of visible stars as a means of measuring light pollution in a given location. Your contributions to the online database will document the visible nighttime sky. By locating and observing the constellation Orion in the night sky, students from around the world will learn how the lights in their community contribute to light pollution.

Materials Needed:

- GLOBE at Night Teacher or Family Activity Packet
- Something to write on (clipboard or cardboard)
- Something to write with (pencil or pen)
- Red light to preserve night vision (A red light can be made by covering a flashlight with a brown paper bag or red cellophane and securing the covering with a rubber band to be sure it doesn't slip while making the observation.)
- Optional: GPS unit, Maporama Web site (www.maporama.com) or topographic map to determine your latitude and longitude

Remember Safety First!

- Please use your judgment as to whether your student should be supervised outside after dark in your location. **We encourage you to do this activity with your student.**
- Be sure your student is wearing suitable clothing for the weather and for being outside at night (light colored and/or with reflective colors).
- When choosing the darkest area in your location, make sure your student is not close to traffic, the edge of a balcony, or near danger in any other way.

Multiple Observations:

You can enter more than one observation by moving to a new location at least 1 km away from your original location. Don't forget to get new latitude and longitude coordinates. This can be done on the same night or on another night any time during March 3 - March 16, 2010.

Five Easy Star-Hunting Steps:

(www.globeatnight.org/observe.html)

1) Find your latitude and longitude

by using any of the following methods:

- a. Use a GPS unit where you take a measurement. Report as many decimal places as the unit provides.
- b. Visit <http://eo.ucar.edu/geocode/> on-line. Input your location. Or input your city; zoom in/out and pan around until you find your location. Double-click and the latitude and longitude will be displayed.
- c. Use topographic map of your area.
- d. Determine your latitude and longitude with the interactive tool when reporting observations on the GLOBE at Night Web site.

2) Find Orion by going outside an hour after sunset (approximately between 7-10 pm local time)

- a. Determine the darkest area by moving to where the most stars are visible in the sky toward Orion. If you have outside lights, be sure they are all off.
- b. Wait outside for at least 10 minutes for your eyes to adapt to the darkness. This is called becoming "dark-adapted."
- c. Locate Orion in the sky. For help use the appropriate Orion Finder Chart (www.globeatnight.org/observe_finder.html) for your latitude.

3) Match your nighttime sky to one of our magnitude charts (pages 2-3)

- a. Select the chart that most closely resembles what you are seeing.
- b. Estimate the cloud cover in the sky.
- c. Fill out the Observation Sheet (page 4).

4) Report your observation online at:

www.globeatnight.org/report.html

- a. Your observation can be recorded any time between March 3 - March 31, 2010.
- b. From March 3-16, do it again from a different location!

5) Compare your observation to thousands around the world at:

www.globeatnight.org/analyze.html

Note for higher latitudes (>45 N or S): You need to do your observation closer to 9:00 pm rather than 8:00 pm or 10:00 pm.



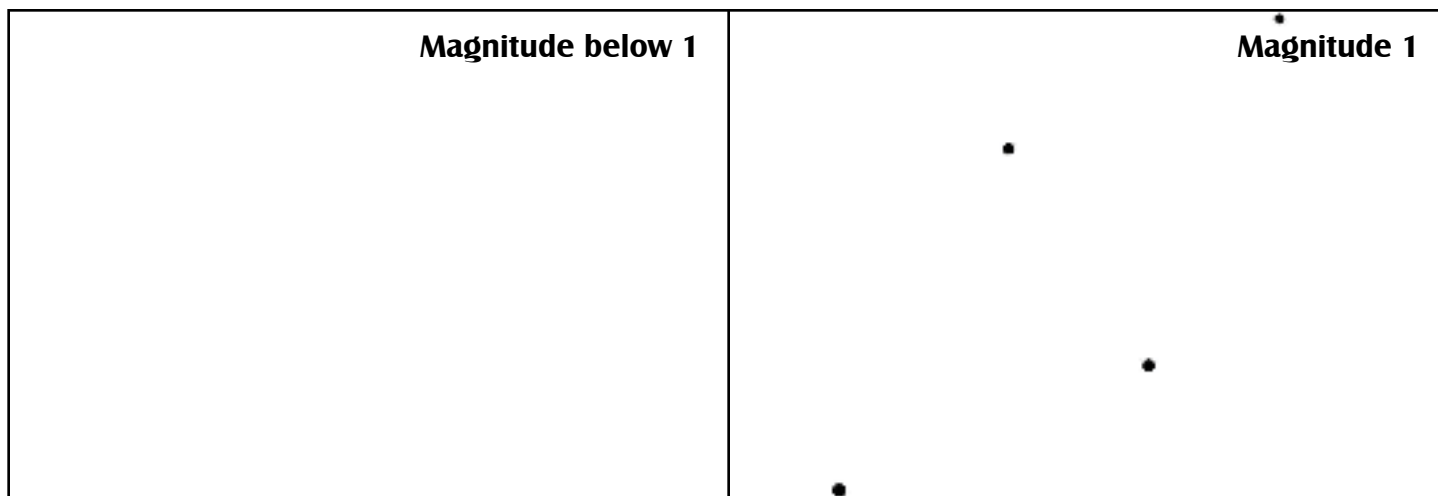
Family Activity Packet: Magnitude Charts

www.globe.gov/globeatnight

March 3 - March 16, 2010

The following charts were generated with celestial North straight up.
Please orient this page according to your location.

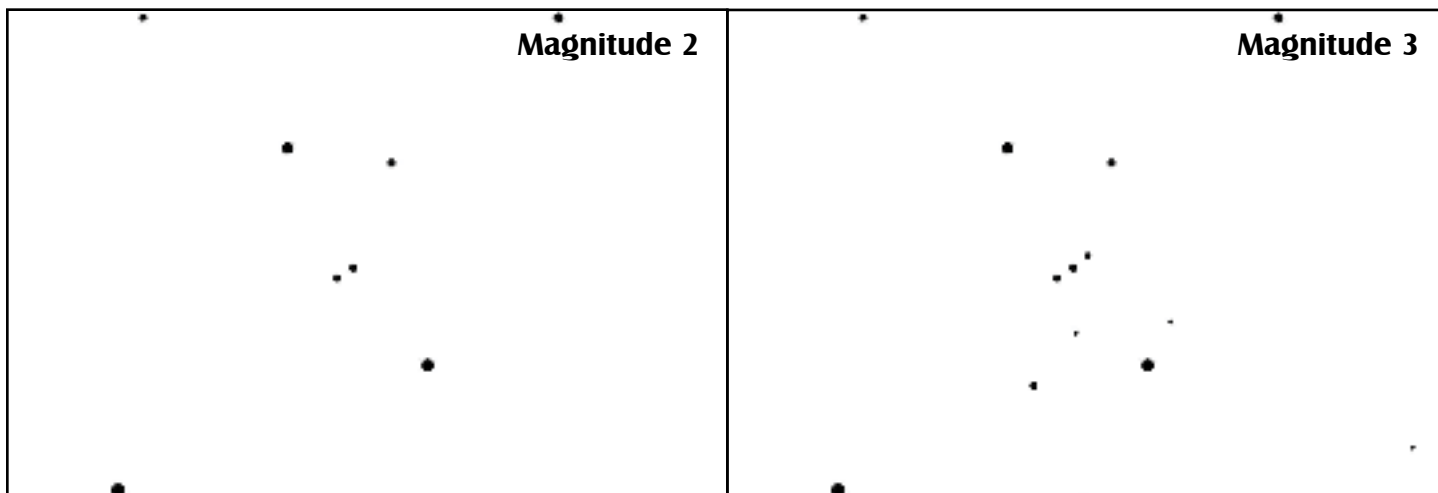
↑ Northern Hemisphere View ↑



Hint: You can't see Orion because he is hidden behind clouds.

Hint: You can only see a couple of the brightest stars in Orion.

Near Equator
View



Hint: You can see two stars in Orion's belt.

Hint: You can see three stars in Orion's belt.

↙ Southern Hemisphere View ↙



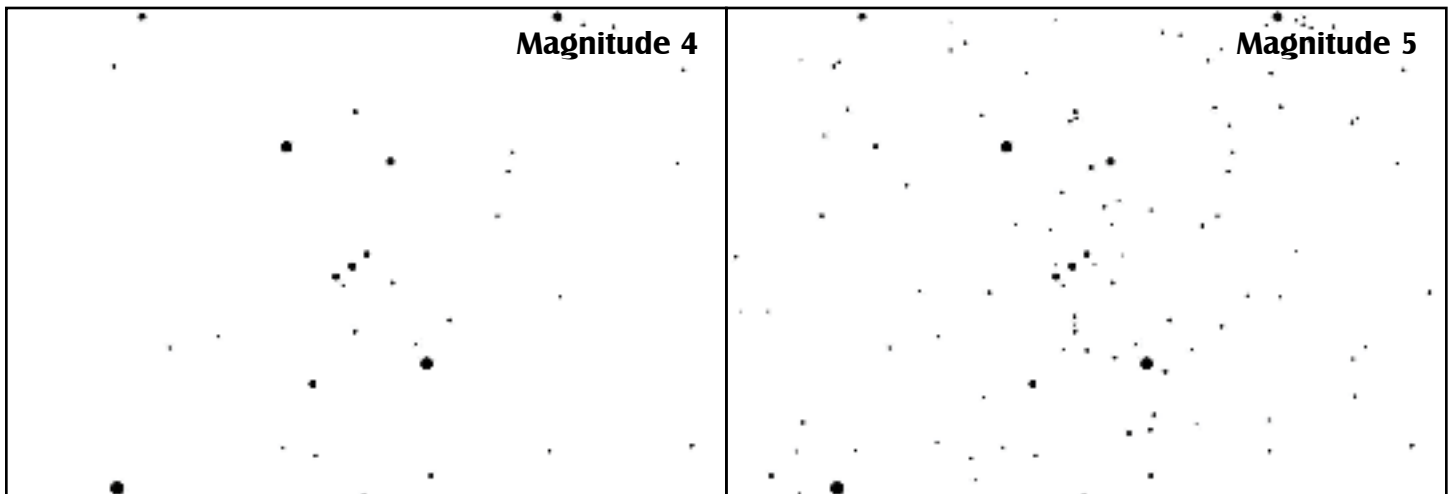
Family Activity Packet: Magnitude Charts

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The following charts were generated with celestial North straight up.
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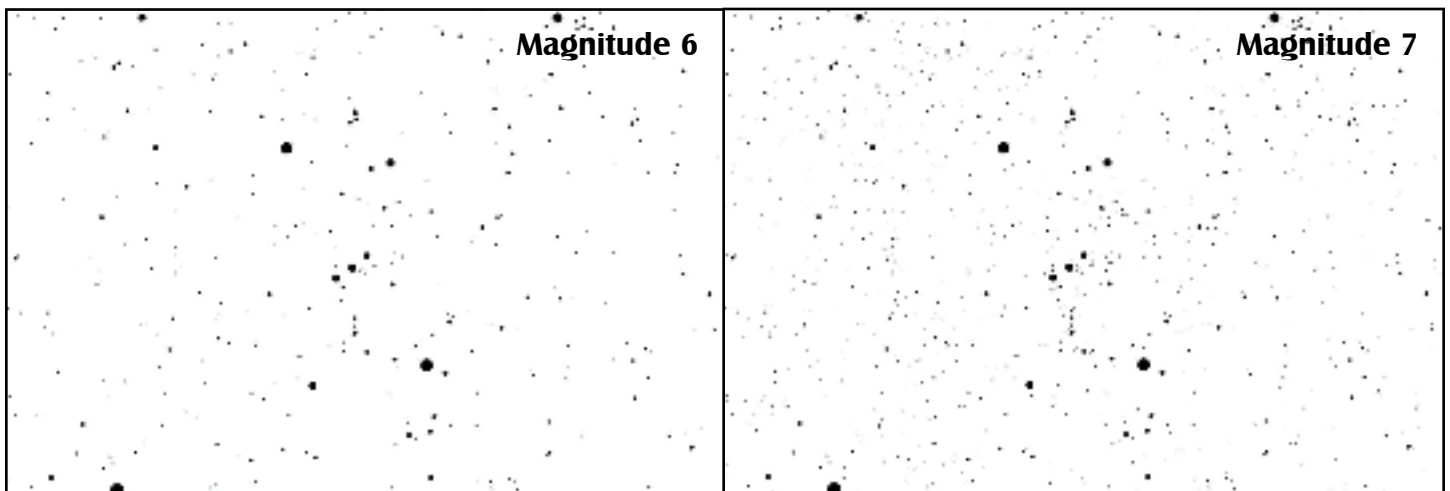
↑ Northern Hemisphere View ↑



Hint: You can see four stars in Orion's belt.

Hint: You can see six stars in Orion's belt,
and also you might be able to see his sword.

Near Equator
View ↑



Hint: You can see many stars in Orion's belt,
and his sword is clearly visible.

Hint: You can't count that many stars!

↙ Southern Hemisphere View ↙



Family Activity Packet: Observation Sheet

www.globe.gov/globeatnight

March 3 - March 16, 2010

Only fields marked by * are required.

*Date: March _____, 2010

*Observation Time: ____:____ PM local time (HH:MM)

*Country: _____

*Latitude (in deg/min/sec ____ deg ____ min ____ sec
or decimal degrees): _____ decimal degrees

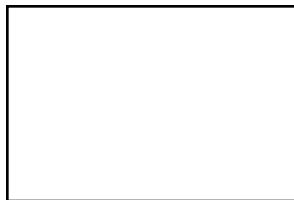
(North / South)

*Longitude (in deg/min/sec ____ deg ____ min ____ sec
or decimal degrees): _____ decimal degrees

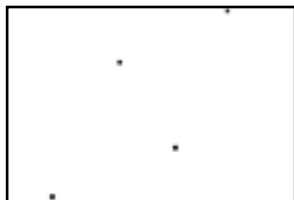
(East / West)

Comments on location: (e.g. There is one street light within 50 m that is shielded from my view.)

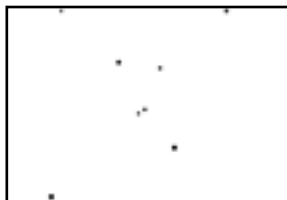
*Match your nighttime sky to one of our magnitude charts :



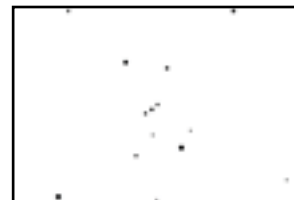
☐ Stars in Orion
not visible



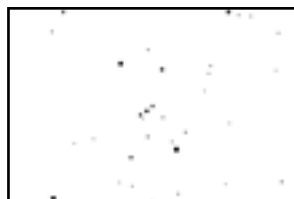
☐ Magnitude 1 Chart



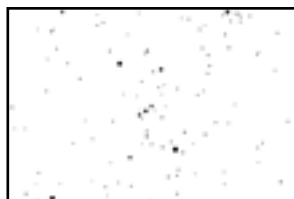
☐ Magnitude 2 Chart



☐ Magnitude 3 Chart



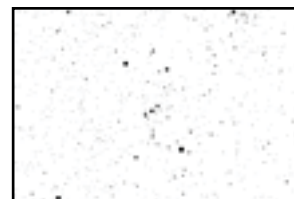
☐ Magnitude 4 Chart



☐ Magnitude 5 Chart



☐ Magnitude 6 Chart



☐ Magnitude 7 Chart

Reading from the Unihedron Sky Quality Meter (if applicable): _____

Serial number from the Unihedron Sky Quality Meter (if applicable): _____

*Estimate the cloud cover in the sky:

☐ Clear

☐ Clouds cover $\frac{1}{4}$ of sky

☐ Clouds cover $\frac{1}{2}$ of sky

☐ Clouds cover $> \frac{1}{2}$ of sky

Comments on sky conditions: (e.g. a little haze to the north)

Report online at www.globeatnight.org/report.html